

CONSTRUCTION PERMIT and PERMIT-BY-RULE OFFICE OF AIR QUALITY

**Ft. Wayne State Developmental Center
4900 St. Joe Road
Ft. Wayne, Indiana 46835**

(herein known as the Permittee) is hereby authorized to **construct and** operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this permit.

This permit is issued to the above mentioned company under the provisions of 326 IAC 2-1.1, 326 IAC 2-5.1, 326 IAC 2-10 and 40 CFR 52.780, with conditions listed on the attached pages.

Operation Permit No.:CP-003-14555-00266	
Issued by: Original Signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: February 27, 2002

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SECTION A

SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-5.1-3(c)]

The Permittee owns and operates boilers in a stationary mental health hospital.

Authorized individual:	Ralph J. Herndon, Physical Plant Director
Source Address:	4900 St. Joe Road, Ft. Wayne, Indiana 46835
Mailing Address:	4900 St. Joe Road, Ft. Wayne, Indiana 46835
SIC Code:	8063
Source Location Status:	Allen
County Status:	Attainment for all criteria pollutants
Source Status:	Permit-By-Rule
	Minor Source, under PSD

A.2 Emissions units and Pollution Control Equipment Summary

This stationary source is approved to operate the following emissions units and pollution control devices:

- (a) Four (4) natural gas-fired boilers, constructed in 2001 and identified as B-1 through B-4. Each boiler has a maximum heat input capacity of 12.218 MMBtu per hour. The boilers are located in the Boiler Room at Carroll Hall and use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight.
- (b) Two (2) natural gas-fired boilers, identified as B-5 and B-6, each having a maximum heat input capacity of 14.65 MMBtu per hour. The boilers use fuel oil No.2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight. Boilers B-5 and B-6 were constructed in 1958 and are located in the Boiler Room at Johnson Hall.
- (c) Two (2) natural gas-fired boilers, identified as B-7 and B-8, each having a maximum heat input capacity of 12.55 MMBtu per hour. Boilers B-7 and B-8 were constructed in 1963 and modified in 2001. The boilers are located in the Boiler Room at Johnson Hall and use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight.
- (d) One (1) 20,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Johnson Hall and was constructed in 2000.
- (e) One (1) 15,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Carroll Hall and was constructed in 2000.

SECTION B GENERAL CONSTRUCTION CONDITIONS

B.1 Permit No Defense [IC 13]

This permit to construct does not relieve the Permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

B.2 Definitions

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, any applicable definitions found in IC 13-11, 326 IAC 1-2, and 326 IAC 2-1.1-1 shall prevail.

B.3 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.4 Revocation of Permits [326 IAC 2-1.1-9(5)]

Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this permit if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.5 Modification to Permit [326 IAC 2]

All requirements and conditions of this construction permit shall remain in effect unless modified in a manner consistent with procedures established for modifications of construction permits pursuant to 326 IAC 2 (Permit Review Rules).

B.6 NSPS Reporting Requirement

Pursuant to the New Source Performance Standards (NSPS), Part 60., Subpart Dc, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM, OAQ. The requirements of 40 CFR Part 60 are also federally enforceable.

SECTION C

SOURCE OPERATION CONDITIONS

Entire Source

C.1 PSD Minor Source Status [326 IAC 2-2] [40 CFR 52.21]

- (a) The total source potential to emit all criteria pollutants of is less than 250 tons per year. Therefore the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) and 40 CFR 52.21 will not apply.
- (b) Any change or modification which may increase potential to emit to 250 tons per year from this source, shall cause this source to be considered a major source under PSD, 326 IAC 2-2 and 40 CFR 52.21, and shall require approval from IDEM, OAQ prior to making the change.
- (c) Any change or modification which may increase potential to emit to 10 tons per year of any single hazardous air pollutant, twenty-five tons per year of any combination of hazardous air pollutants, or 100 tons per year of any other regulated pollutant from this source, shall cause this source to be considered a major source under Part 70 Permit Program, 326 IAC 2-7, and shall require approval from IDEM, OAQ prior to making the change.

C.2 Source Modification [326 IAC 2-7-10.5]

- (a) The Permittee must comply with the requirements of 326 IAC 2-7-10.5 whenever the Permittee seeks to construct new emissions units, modify existing emissions units, or otherwise modify the source.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application should be certified by the "responsible official" as defined by 326 IAC 2-7-1(34) only if a certification is required by the terms of the applicable rule.

C.3 Inspection and Entry [326 IAC 2-5.1-3(e)(4)(B)]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) Have access to and copy, at reasonable times, any records that must be kept under this title or the conditions of this permit or any operating permit revisions;
- (c) Inspect, at reasonable times, any processes, emissions units (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit or any operating permit revisions;

- (d) Sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) Utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

C.4 Permit Revocation [326 IAC 2-1-9]

Pursuant to 326 IAC 2-1-9(a)(Revocation of Permits), this permit to construct and operate may be revoked for any of the following causes:

- (a) Violation of any conditions of this permit.
- (b) Failure to disclose all the relevant facts, or misrepresentation in obtaining this permit.
- (c) Changes in regulatory requirements that mandate either a temporary or permanent reduction of discharge of contaminants. However, the amendment of appropriate sections of this permit shall not require revocation of this permit.
- (d) Noncompliance with orders issued pursuant to 326 IAC 1-5 (Episode Alert Levels) to reduce emissions during an air pollution episode.
- (e) For any cause which establishes in the judgment of IDEM, the fact that continuance of this permit is not consistent with purposes of this article.

C.5 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.6 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

Testing Requirements

C.7 Performance Testing [326 IAC 3-6]

- (a) Compliance testing on new emissions units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The Permittee shall submit a notice of the actual test date to the above address so that it is received at least two weeks prior to the test date.

- (b) All test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by the IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

The documentation submitted by the Permittee does not require certification by the "authorized individual" as defined by 326 IAC 2-1.1-1.

Compliance Monitoring Requirements

C.8 Compliance Monitoring [326 IAC 2-1.1-11]

Compliance with applicable requirements shall be documented as required by this permit. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. All monitoring and record keeping requirements not already legally required shall be implemented when operation begins.

C.9 Monitoring Methods [326 IAC 3]

Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, or other approved methods as specified in this permit.

SECTION D.1

EMISSIONS UNIT OPERATION CONDITIONS

Facility Description :

- (a) Four (4) natural gas-fired boilers, constructed in 2001 and identified as B-1 through B-4. Each boiler has a maximum heat input capacity of 12.218 MMBtu per hour. The boilers are located in the Boiler Room at Carroll Hall and use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight.
- (b) Two (2) natural gas-fired boilers, identified as B-5 and B-6, each having a maximum heat input capacity of 14.65 MMBtu per hour. The boilers use fuel oil No.2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight. Boilers B-5 and B-6 were constructed in 1958 and are located in the Boiler Room at Johnson Hall.
- (c) Two (2) natural gas-fired boilers, identified as B-7 and B-8, each having a maximum heat input capacity of 12.55 MMBtu per hour. Boilers B-7 and B-8 were constructed in 1963 and modified in 2001. The boilers are located in the Boiler Room at Johnson Hall and use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5 % by weight.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards

D.1.1 Permit By Rule [326 IAC 2-10]

Pursuant to 326 IAC 2-10 (Permit by Rule), this source shall comply with the following conditions:

- (a) The source's total actual emissions for every 12-month period shall be limited to less than 20% of any threshold for the following:
 - (1) A major source of regulated air pollutants.
 - (2) A major source of hazardous air pollutants, as defined in Section 112 of the Clean Air Act. [326 IAC 2-10-3(1)]

In order to comply with this condition, the amount of natural gas burned in the boilers shall be less than 400 MMcf in any twelve (12) consecutive month period.

- (b) The source shall not rely on air pollution control equipment to comply with the above-mentioned limitations. [326 IAC 2-10-3(2)]
- (c) Not later than thirty (30) days after receipt of written request by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), or U.S. Environmental Protection Agency (EPA), the owner or operator shall demonstrate that the source is in compliance with the above-mentioned conditions. [326 IAC 2-10-4]
- (d) Compliance demonstration shall be based on actual emissions for the previous 12 months and may include, but is not limited to, fuel or material usage or production records. No other demonstration of compliance shall be required. [326 IAC 2-10-4]
- (e) The Permit by Rule approval does not relieve the source of the responsibility to comply with the provisions of any applicable federal, state, or local requirements, such as New source Performance Standards (NSPS), 40 CFR Part 60, or National Standards for Hazardous Air Pollutants (NESHAP), 40 CFR Part 61. [326 IAC 2-10-5]

- (f) Any change or modification which will alter operations in such a way that the source will no longer comply with 326 IAC 2-10 (Permit by Rule), must obtain the appropriate approval from the OAQ under 326 IAC 2-1.1, 326 IAC 2-2, 326 IAC 2-3, 326 IAC 2-7, 326 IAC 2-8, or 326 IAC 2-9 before such change may occur. This source may at any time apply for a state operating permit under 326 IAC 2-6.1, a Part 70 permit under 326 IAC 2-7, a FESOP under 326 IAC 2-8, or an operating agreement under 326 IAC 2-9, as applicable. [326 IAC 2-10-1(b)]
- (g) Any violation of 326 IAC 2-10 (Permit by Rule) may result in administrative or judicial enforcement proceedings under IC 13-30-3 and penalties under IC 13-30-4.

D.1.2 General Provision Relating to NSPS [326 IAC 12-1] [40 CFR 60, Subpart A]

The provisions of 40 CFR 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR 60, Subpart Dc.

D.1.3 Sulfur Dioxide (SO₂) [40 CFR 60, Subpart Dc]

Pursuant to 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units), boilers B-1, B-2, B-4, B-7, and B-8 are subject to the following requirements:

- (a) The SO₂ emissions from boilers B-1, B-2, B-3, B-4, B-7, and B-8 shall not exceed five tenths (0.5) pounds per million Btu heat input; or
- (b) The sulfur content of the fuel oil shall not exceed five-tenths percent (0.5%) by weight. [40 CFR 60.42c(d)]

Pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction.

Compliance Determination Requirements

D.1.4 Sulfur Dioxide Emissions and Sulfur Content

Pursuant to 40 CFR 60, Subpart Dc, the Permittee shall demonstrate compliance utilizing one of the following options:

- (a) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification; or
- (b) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
 - (1) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
 - (2) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling.

Record Keeping and Reporting Requirements

D.1.5 Record Keeping Requirements

- (a) To document compliance with Condition D.1.3, the Permittee shall maintain records in accordance with (1) through (6) below. Note that pursuant to 40 CFR 60 Subpart Dc, the fuel oil sulfur limit applies at all times including periods of startup, shutdown, and malfunction.
 - (1) Calendar dates covered in the compliance determination period;

- (2) Actual fuel oil usage since last compliance determination period and equivalent sulfur dioxide emissions;
- (3) A certification, signed by the owner or operator, that the records of the fuel supplier certifications represent all of the fuel combusted during the period, the natural gas fired boiler certification does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1); and

If the fuel supplier certification is used to demonstrate compliance the following, as a minimum, shall be maintained:

- (4) Fuel supplier certifications.
- (5) The name of the fuel supplier; and
- (6) A statement from the fuel supplier that certifies the sulfur content of the fuel oil.

The Permittee shall retain records of all recording/monitoring data and support information for a period of five (5) years, or longer if specified elsewhere in this permit, from the date of the monitoring sample, measurement, or report. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation, and copies of all reports required by this permit.

- (b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.1.6 Reporting Requirements

The Permittee shall certify, on the form provided, that natural gas was fired in the boilers at all times during each calendar year. Alternatively, the Permittee shall report the number of days which an alternate fuel was burned during each calendar year.

SECTION D.2

FACILITY OPERATION CONDITIONS

Facility Description:

- (d) One (1) 20,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Johnson Hall and was constructed in 2000.
- (e) One (1) 15,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Carroll Hall and was constructed in 2000.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards [326 IAC 2-8-4(1)]

D.2.1 Volatile Organic Compound Storage Vessels [40 CFR 60, Subpart Kb]

- (a) The fuel storage tanks are subject to 40 CFR 60, Subpart Kb because the maximum capacity of each tank is greater than 40m³, each tank is used to store volatile organic liquids (including petroleum), and construction, reconstruction, or modification commenced after July 23, 1984.

Pursuant to 40 CFR 60.116(b) paragraphs (a) and (b), the Permittee shall maintain records as stated in Condition D.2.2.
- (b) The tanks are exempt from the General Provisions (Part 60, Subpart A) and from all other provisions of this subpart for the following reasons:
 - (h) The storage tank located at Johnson Hall has a capacity greater than 75m³ but less than 151m³, storing liquid with a maximum true vapor pressure less than 15.0 kPa.
- (2) The storage tank located at Carroll Hall has a capacity less than 75m³.

Record Keeping and Reporting Requirement [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

D.2.2 Record Keeping Requirements

Pursuant to 40 CFR 60, Subpart Kb (326 IAC 12), the Permittee shall maintain records in accordance with (a) through (d) below:

- (a) The volatile organic liquid stored in each tank;
- (b) The period of storage;
- (c) The maximum true vapor pressure of the volatile organic liquid during the storage period; and
- (d) The dimensions of the storage tanks and an analysis showing the capacity of the storage tanks.

The Permittee shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range. (Available data on the storage temperature may be used to determine the maximum vapor pressure as indicated in 40 CFR 60.117(b)(e)(1) through (3)).

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION**

NATURAL GAS FIRED BOILER CERTIFICATION

Source Name: Ft. Wayne State Developmental Center
Source Address: 4900 St. Joe Road, Ft. Wayne, Indiana 46835
Mailing Address: 4900 St. Joe Road, Ft. Wayne, Indiana 46835
MSOP No.: 003-14555-00266

9	Natural Gas Only
9	Alternate Fuel burned
From: _____	To: _____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

A certification by the responsible official as defined by 326 IAC 2-1.1-1 is required for this report.

Indiana Department of Environmental Management Office of Air Quality

Addendum to the Technical Support Document for A Construction Permit and Permit-by-Rule

Source Background and Description

Source Name: Ft. Wayne State Developmental Center
 Source Location: 4900 St. Joe Road, Ft. Wayne, Indiana 46835
 County: Allen
 SIC Code: 8063
 Operation Permit No.: CP 003-14555-00266
 Permit Reviewer: ERG/AB

On January 1, 2002, the Office of Air Quality (OAQ) had a notice published in the Ft. Wayne Journal Gazette, Ft. Wayne, Indiana, stating that the Ft. Wayne State Developmental Center had applied for a Construction Permit to construct new boilers and modify existing boilers and a Permit-by-Rule to operate the boilers. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

Upon further review, the OAQ has decided to make the following revisions to the permit (bolded language has been added, the language with a line through it has been deleted).

1. Condition D.2.1 incorrectly stated that the recordkeeping requirements could be found in Condition D.3.2 instead of Condition D.2.2. Condition D.2.1 has been revised as follows:

D.2.1 Volatile Organic Compound Storage Vessels [40 CFR 60, Subpart Kb]

- (a) The fuel storage tanks are subject to 40 CFR 60, Subpart Kb because the maximum capacity of each tank is greater than 40m³, each tank is used to store volatile organic liquids (including petroleum), and construction, reconstruction, or modification commenced after July 23, 1984.

Pursuant to 40 CFR 60.116(b) paragraphs (a) and (b), the Permittee shall maintain records as stated in Condition **D.2.2** ~~D.3.2~~.

- (b) The tanks are exempt from the General Provisions (Part 60, Subpart A) and from all other provisions of this subpart for the following reasons:
 - (a) The storage tank located at Johnson Hall has a capacity greater than 75m³ but less than 151m³, storing liquid with a maximum true vapor pressure less than 15.0 kPa.
 - (2) The storage tank located at Carroll Hall has a capacity less than 75m³.

2. Condition D.2.2 stated that the records required under 40 CFR 60, Subpart Kb were outlined in ‘...(1) through (4)...’ instead of ‘...(a) through (d)...’ Condition 2.2 has been revised as follows:

D.2.2 Record Keeping Requirements

Pursuant to 40 CFR 60, Subpart Kb (326 IAC 12), the Permittee shall maintain records in accordance with **(a) through (d)** ~~(1) through (4)~~ below:

- (a) The volatile organic liquid stored in each tank;
- (b) The period of storage;
- (c) The maximum true vapor pressure of the volatile organic liquid during the storage period;
and
- (d) The dimensions of the storage tanks and an analysis showing the capacity of the storage tanks.

The Permittee shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range. (Available data on the storage temperature may be used to determine the maximum vapor pressure as indicated in 40 CFR 60.117(b)(e)(1) through (3)).

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Construction Permit and Permit-By-Rule

Source Background and Description

Source Name: Ft. Wayne State Developmental Center
Source Location: 4900 St. Joe Road, Ft. Wayne, Indiana 46835
County: Allen
SIC Code: 8063
Permit No.: 003-14555-00266
Permit Reviewer: ERG/AB

The Office of Air Quality (OAQ) has reviewed a construction permit and Permit-By-Rule application from the Ft. Wayne State Developmental Center relating to the operation of eight utility boilers.

Unpermitted Emission Units and Pollution Control Equipment

The source consists of the following unpermitted facilities/units:

- (a) Four (4) natural gas-fired boilers each having a maximum heat input capacity of 11.34 MMBtu per hour, using fuel oil No. 2 as a backup fuel. These units were constructed in 1963 in the Boiler Room in Carroll Hall and will be replaced by the new boilers B-1, B-2, B-3 and B-4.
- (b) Two (2) natural gas-fired boilers, identified as B-5 and B-6, each having a maximum heat input capacity of 14.65 MMBtu per hour. The boilers use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5% by weight. The boilers were constructed in 1958 and are located in the Boiler Room at Johnson Hall.
- (c) Two (2) natural gas-fired boilers, identified as B-7 and B-8, each having a maximum heat input capacity of 12.55 MMBtu per hour. The boilers B-7 and B-8 were constructed in 1963 and modified in 2001. The boilers are located in the Boiler Room at Johnson Hall and use fuel No. 2 as a backup fuel, which has a maximum sulfur content of 0.5% by weight.

New Emission Units and Pollution Control Equipment Receiving Advanced Source Modification Approval

The application includes information relating to the prior approval for the construction and operation of the following equipment:

- (a) Four (4) natural gas-fired boilers constructed in 2001, identified as B-1 through B-4. Each boiler has a maximum heat input capacity of 12.218 MMBtu per hour. The boilers are located in the Boiler Room at Carroll Hall and use fuel oil No. 2 as a backup fuel, which has a maximum sulfur content of 0.5 by weight.

- (b) New burners for two (2) existing natural gas-fired boilers, identified as B-7 and B-8, located in the Boiler Room at Johnson Hall. The modified boilers will use fuel oil No. 2 as a back-up fuel.

Insignificant Activities

The source also consists of the following insignificant activities, as defined in 326 IAC 2-7-1(21):

- (a) One (1) 20,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Johnson Hall and was constructed in 2000.
- (b) One (1) 15,000 gallon underground storage tank used to store fuel oil No. 2. The storage tank is located at Carroll Hall and was constructed in 2000.

Existing Approvals

There are no existing permits issued to this source.

Enforcement Issue

- (a) IDEM is aware that the original eight boilers located at this site were operated without a permit. The subject equipment is listed in this Technical Support Document under the condition entitled *Unpermitted Emission Units and Pollution Control Equipment*.
- (b) IDEM is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the operating permit rules.

Recommendation

The staff recommends to the Commissioner that this Construction Permit/Permit-By-Rule be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An administratively complete application for the purposes of this review was received on June 28, 2001. Additional information was received on July 24, 2001 and July 27, 2001.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (pages 1 through 14).

Potential To Emit for the Source

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

This table reflects the PTE before controls after the above modifications have been made. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	6.5

Pollutant	Potential To Emit (tons/year)
PM-10	6.5
SO ₂	229.5
VOC	2.5
CO	38.0
NO _x	64.6

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

- (a) The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of SO₂ is equal to or greater than 100 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-7.
- (b) Pursuant to 326 IAC 2-10, this source, otherwise required to obtain a Title V permit, has agreed to accept a permit with Construction Permit and Permit-By-Rule that restricts PTE to below 20% of major source levels. The source has agreed to limit SO₂, CO and NO_x emissions to less than twenty (20) tons per twelve (12) consecutive month period. Therefore, this source will be issued a Construction Permit and Permit-By-Rule.
- (c) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive emissions are not counted toward determination of PSD and Emission Offset applicability.

Potential to Emit After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Federally Enforceable State Operating Permit.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Boilers 1 through 8	6	6	Less than 20	2.5	Less than 20	Less than 20	Negligible

County Attainment Status

The source is located in Allen County.

Pollutant	Status
PM-10	Attainment
SO ₂	Attainment
NO ₂	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Allen County has been designated as attainment or unclassifiable for ozone.

- (b) Allen County has been classified as attainment or unclassifiable for PM₁₀, SO₂, CO, and lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (c) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Federal Rule Applicability

- (a) Boilers 1, 2, 3, 4, 7 and 8 are subject to the New Source Performance Standard, 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (326 IAC 12) because:

- (1) Boilers 1 through 4 were constructed after June 9, 1989;
- (2) Boilers 7 and 8 were modified after June 9, 1989; and
- (3) The boilers each have a maximum heat input capacity greater than 10 MMBtu/hr and less than 100 MMBtu/hr.

Pursuant to 40 CFR 60, Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units), the sulfur content of the fuel oil burned in each of these boilers shall not exceed five-tenths percent (0.5%) by weight [40 CFR 60.42c(d)]. This fuel oil sulfur content limit applies at all times, including periods of startup, shutdown, and malfunction. The source must demonstrate compliance by either:

- (a) Providing vendor analysis of fuel delivered with vendor certification; or
 - (b) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19. Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted. If a partially empty fuel tank is refilled, a new sample and analysis would be required after filling.
- (b) Boilers 5 and 6 are not subject to the New Source Performance Standard, 40 CFR 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (326 IAC 12) because these boilers were constructed in 1958 and were not modified or reconstructed after June 9, 1989.

- Note:
- (1) The original eight boilers were constructed prior to June 9, 1989 and were not subject to the requirements of 40 CFR 60, Subpart Dc.
 - (2) The two original fuel oil storage tanks were constructed between 1958 and 1963. They were, therefore, not subject to 40 CFR 60, Subparts k, ka, or kb.

- (c) This source is subject to the New Source Performance Standard (NSPS), 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (326 IAC 12), because the storage tanks located at this source have capacities greater than 40 cubic meters (10,567 gallons), they are used to store petroleum liquids, and they were constructed in 2000. Since the storage capacity of the tank located at Carrol Hall is less than 75 cubic meters (19,812

gallons), this storage tank is subject only to the record keeping provisions of 40 CFR 60.116b paragraphs (a) and (b). Although the storage tank located at Johnson Hall has a capacity above 75 cubic meters (19,812 gallons), the maximum true vapor pressure for the fuel oil stored in the tank is less than 15.0 Kpa. Consequently, this storage tank is also subject only to the record keeping provisions in 40 CFR 60.116b, paragraphs (a) and (b).

- (d) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Allen County and the potential to emit CO, VOC, NO_x, PM₁₀, SO₂ is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Visible Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 2-10 (Permit by Rule)

Pursuant to 326 IAC 2-10 (Permit by Rule), this source shall comply with the following conditions:

- (a) The source's total actual emissions for every 12-month period shall be limited to less than 20% of any threshold for the following:
- (1) A major source of regulated air pollutants.
- (2) A major source of hazardous air pollutants, as defined in Section 112 of the Clean Air Act. [326 IAC 2-10-3(1)]

In order to comply with this condition, the amount of natural gas burned in the boilers shall be less than 400 MMcf in any twelve (12) consecutive month period.

- (b) The source shall not rely on air pollution control equipment to comply with the above-mentioned limitations. [326 IAC 2-10-3(2)]
- (c) Not later than thirty (30) days after receipt of written request by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ), or U.S. Environmental Protection Agency (EPA), the owner or operator shall demonstrate that the source is in compliance with the above-mentioned conditions. [326 IAC 2-10-4]
- (d) Compliance demonstration shall be based on actual emissions for the previous 12 months and may include, but is not limited to, fuel or material usage or production records. No other demonstration of compliance shall be required. [326 IAC 2-10-4]

Note: The natural gas usage limit for the boilers was calculated as follows:

NO_x represents the greatest single air pollutant emitted during the combustion of natural gas. By limiting the amount of NO_x emitted to 20 tons per year, the emissions of CO, VOC, SO₂, PM, PM₁₀, and HAPs will also be less than 20% of the major source thresholds.

$$\text{Natural Gas Limit} = \frac{(20 \text{ tons/yr})}{(100 \text{ lb/MMcf})} \times \frac{2000 \text{ lb}}{(1 \text{ ton})}$$

$$\text{Natural Gas Limit} = 400 \text{ MMcf/year}$$

State Rule Applicability - Individual Facilities

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of the four new boilers (identified as B-1 through B-4) and the two modified boilers (identified as B-7 and B-8) will emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 8-1-6 (New Facilities - General Reduction Requirement)

The new boilers (identified as B-1 through B-4) and the modified boilers (identified as B-7 and B-8) each have potential to emit VOC of less than twenty-five (25) tons per year; therefore, these units are not subject to the requirements of 326 IAC 8-1-6.

326 IAC 6-2-3 (Particulate Emission Limitations for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-3 (b) (Particulate emission limitations for sources of indirect heating: emission limitations for facilities specified in 326 IAC 6-2-1 (b)), particulate emissions from boilers B-5, B-6, B-7 and B-8, which were existing and in operation before June 8, 1972, shall in no case exceed 0.2 pounds of particulate matter per million British thermal units heat input.

This limit was calculated using the following equation:

$$P_t = \frac{C \times a \times h}{76.5 \times Q^{0.75} \times N^{0.25}}$$

where

- C = Maximum ground level concentration with respect to distance from the point source at the "critical" wind speed for level terrain (50 micrograms per m³)
- P_t = Pounds of particulate matter emitted per million Btu heat input (lb/MMBtu)
- Q = Total source maximum operating capacity for all facilities in operation on June 8, 1972
- N = Number of stacks
- a = Plume rise factor (0.67 for Q less than 1,000 MMBtu/hr)
- h = Weighted stack height (24.5ft)

The weighted stack height was calculated as follows:

$$h = \frac{(4)(28)(2.0) + (4)(21)(2.0)}{(2.0)(8)} \times (99.76)$$

$$h = 24.5 \text{ feet}$$

The emission limit was calculated as follows:

$$P_t = \frac{(50)(0.67)(24.5)}{(76.5)(99.76)^{0.75}(8)^{0.25}}$$

$$P_t = \underline{820.75} = 0.2 \text{ lb/MMBtu}$$

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Note: 326 IAC 6-2-4 does not apply to boilers 7 and 8 because only the burners are being replaced not the entire boiler. 326 IAC 6-3 applies to boilers 7 and 8 because they were constructed in 1963.

326 IAC 7-1.1-1(Sulfur Dioxide Emissions)

Pursuant to 326 IAC 7-1.1 (SO₂ Emissions Limitations) the SO₂ emissions from each boiler shall not exceed five tenths (0.5) pounds per million Btu heat input.

The Permittee shall demonstrate compliance utilizing one of the following options:

- (a) Providing vendor analysis of fuel delivered, if accompanied by a vendor certification; or
- (b) Analyzing the oil sample to determine the sulfur content of the oil via the procedures in 40 CFR 60, Appendix A, Method 19.
 - (1) Oil samples may be collected from the fuel tank immediately after the fuel tank is filled and before any oil is combusted; and
 - (2) If a partially empty fuel tank is refilled, a new sample and analysis would be required upon filling.

326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating)

Pursuant to 326 IAC 6-2-4 (Particulate Matter Emission Limitations for Sources of Indirect Heating: Emissions Limitations for Facilities Specified in 326 IAC 6-2-1(d)), the PM emissions from boilers B-1, B-2, B-3 and B-4 shall be limited to 0.33 pounds per MMBtu heat input.

This limitation was calculated using the following equation:

$$Pt = \frac{1.09}{Q^{0.26}}$$

Where Pt = Pounds of particulate matter emitted per million Btu heat input; and
Q = Total source maximum operating capacity in MMBtu per hour (includes boilers B-1 through B-8)

$$Q = (4) (12.218 \text{ MMBtu/hour}) + (2) (14.65 \text{ MMBtu/hour}) + (2) (12.55 \text{ MMBtu/hour})$$

$$Q = 103.3 \text{ MMBtu/hour}$$

$$Pt = \frac{1.09}{Q^{0.26}} = 0.33 \text{ lb/MMBtu heat input}$$

Testing Requirements

No stack tests are required for this source because the emission estimates were calculated using AP-42 emission factor with a reliability rating above D.

Conclusion

The operation of these utility boilers shall be subject to the conditions of the attached proposed Construction Permit/Permit by Rule (No.: 003-14555-00266).

Appendix A: Emissions Calculations

Natural Gas Combustion Only

MM BTU/HR <100

Small Industrial Boilers No. 1 through No. 4

Company Name: Ft. Wayne State Developmental Center

Address City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Plt ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

48.9

428.1

Includes boilers identified as No.1 through No.4, which each have a maximum capacity of 12.218 MMBtu/hour.

Pollutant

Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	7.6	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	1.6	1.6	0.1	21.4	1.2	18.0

*PM emission factor is filterable and condensable PM.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations**Natural Gas Combustion Only****MM BTU/HR <100****Small Industrial Boilers No. 1 through No. 4****HAPs Emissions****Company Name: Ft. Wayne State Developmental Center****Address City IN Zip: Ft. Wayne, Indiana 46835****CP: 003-14555****Plt ID: 003-00266****Reviewer: ERG/AB****Date: 07/16/01****HAPs - Organics**

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	4.495E-04	2.569E-04	1.605E-02	3.853E-01	7.278E-04

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	1.070E-04	2.355E-04	2.997E-04	8.134E-05	4.495E-04

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations

Natural Gas Combustion Only

MM BTU/HR <100

Small Industrial Boilers No. 5 and No. 6

Company Name: Ft. Wayne State Developmental Center

Address City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Plt ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

29.3

256.7

Includes boilers identified as No.5 and No.6, which each have a maximum capacity of 14.65 MMBtu/hour.

Pollutant

Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	7.6	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	1.0	1.0	0.1	12.8	0.7	10.8

*PM emission factor is filterable and condensable PM.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

**Appendix A: Emissions Calculations
Natural Gas Combustion Only**

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MM BTU/HR <100

Small Industrial Boilers No. 5 and No. 6

HAPs Emissions

Company Name: Ft. Wayne State Developmental Center

Address City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Plt ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	2.695E-04	1.540E-04	9.625E-03	2.310E-01	4.363E-04

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	6.417E-05	1.412E-04	1.797E-04	4.877E-05	2.695E-04

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

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Appendix A: Emissions Calculations

Natural Gas Combustion Only

MM BTU/HR <100

Small Industrial Boilers No. 7 and No. 8

Company Name: Ft. Wayne State Developmental Center

Address City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Plt ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

Heat Input Capacity
MMBtu/hr

Potential Throughput
MMCF/yr

25.1

219.9

Includes boilers identified as No.7 and No.8, which each have a maximum capacity of 12.55 MMBtu/hour.

Pollutant

Emission Factor in lb/MMCF	PM*	PM10*	SO2	NOx	VOC	CO
	7.6	7.6	0.6	100.0	5.5	84.0
				**see below		
Potential Emission in tons/yr	0.8	0.8	0.1	11.0	0.6	9.2

*PM emission factor is filterable and condensable PM.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emissions calculations.

**Appendix A: Emissions Calculations
Natural Gas Combustion Only**

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MM BTU/HR <100

Small Industrial Boilers No. 7 and No. 8

HAPs Emissions

Company Name: Ft. Wayne State Developmental Center

Address City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Plt ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Organics

Emission Factor in lb/MMcf	Benzene 2.1E-03	Dichlorobenzene 1.2E-03	Formaldehyde 7.5E-02	Hexane 1.8E+00	Toluene 3.4E-03
Potential Emission in tons/yr	2.309E-04	1.319E-04	8.245E-03	1.979E-01	3.738E-04

HAPs - Metals

Emission Factor in lb/MMcf	Lead 5.0E-04	Cadmium 1.1E-03	Chromium 1.4E-03	Manganese 3.8E-04	Nickel 2.1E-03
Potential Emission in tons/yr	5.497E-05	1.209E-04	1.539E-04	4.178E-05	2.309E-04

Methodology is the same as page 1.

The five highest organic and metal HAPs emission factors are provided above.
Additional HAPs emission factors are available in AP-42, Chapter 1.4.

Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
#2 Fuel Oil

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Small Industrial Boilers No. 1 through No. 4
Company Name: Ft. Wayne State Developmental Center
Address, City IN Zip: Ft. Wayne, Indiana 46835
CP: 003-14555
Pit ID: 003-00266
Reviewer: ERG/AB
Date: 07/16/01

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.5
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48.9	3059.74286
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Includes boilers identified as No.1 through No.4, which each have a maximum capacity of 12.218 MMBtu/hour.

Emission Factor in lb/kgal	Pollutant				
	PM*	SO2	NOx	VOC	CO
	2.0	71 (142.0S)	20.0	0.34	5.0
Potential Emission in tons/yr	3.1	108.6	30.6	0.5	7.6

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emission calculations.

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)

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#2 Fuel Oil

HAPs Emissions

Small Industrial Boilers No. 1 through No. 4

Company Name: Ft. Wayne State Developmental Center

Address, City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Pit ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Metals

Emission Factor in lb/mmBtu	Arsenic 4.0E-06	Beryllium 3.0E-06	Cadmium 3.0E-06	Chromium 3.0E-06	Lead 9.0E-06
Potential Emission in tons/yr	8.57E-04	6.43E-04	6.43E-04	6.43E-04	1.93E-03

HAPs - Metals (continued)

Emission Factor in lb/mmBtu	Mercury 3.0E-06	Manganese 6.0E-06	Nickel 3.0E-06	Selenium 1.5E-05
Potential Emission in tons/yr	6.43E-04	1.29E-03	6.43E-04	3.21E-03

Methodology

No data was available in AP-42 for organic HAPs.

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
#2 Fuel Oil

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Small Industrial Boilers No. 5 and No. 6
Company Name: Ft. Wayne State Developmental Center
Address, City IN Zip: Ft. Wayne, Indiana 46835
CP: 003-14555
Pit ID: 003-00266
Reviewer: ERG/AB
Date: 07/16/01

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.5
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29.3	1833.34286
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Includes boilers identified as No.5 and No.6, which each have a maximum capacity of 14.65 MMBtu/hour.

Emission Factor in lb/kgal	Pollutant				
	PM*	SO2	NOx	VOC	CO
	2.0	71 (142.0S)	20.0	0.34	5.0
Potential Emission in tons/yr	1.8	65.1	18.3	0.3	4.6

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emission calculations.

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)

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#2 Fuel Oil

HAPs Emissions

Small Industrial Boilers No. 5 and No. 6

Company Name: Ft. Wayne State Developmental Center

Address, City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Pit ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Metals

Emission Factor in lb/mmBtu	Arsenic 4.0E-06	Beryllium 3.0E-06	Cadmium 3.0E-06	Chromium 3.0E-06	Lead 9.0E-06
Potential Emission in tons/yr	5.13E-04	3.85E-04	3.85E-04	3.85E-04	1.16E-03

HAPs - Metals (continued)

Emission Factor in lb/mmBtu	Mercury 3.0E-06	Manganese 6.0E-06	Nickel 3.0E-06	Selenium 1.5E-05
Potential Emission in tons/yr	3.85E-04	7.70E-04	3.85E-04	1.93E-03

Methodology

No data was available in AP-42 for organic HAPs.

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
#2 Fuel Oil

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Small Industrial Boilers No. 7 and No. 8
Company Name: Ft. Wayne State Developmental Center
Address, City IN Zip: Ft. Wayne, Indiana 46835
CP: 003-14555
Pit ID: 003-00266
Reviewer: ERG/AB
Date: 07/16/01

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.5
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25.1	1570.54286
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Includes boilers identified as No.7 and No.8, which each have a maximum capacity of 12.55 MMBtu/hour.

Emission Factor in lb/kgal	Pollutant				
	PM*	SO2	NOx	VOC	CO
	2.0	71 (142.0S)	20.0	0.34	5.0
Potential Emission in tons/yr	1.6	55.8	15.7	0.3	3.9

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emission calculations.

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)

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#2 Fuel Oil

HAPs Emissions

Small Industrial Boilers No. 7 and No. 8

Company Name: Ft. Wayne State Developmental Center

Address, City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Pit ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Metals

Emission Factor in lb/mmBtu	Arsenic 4.0E-06	Beryllium 3.0E-06	Cadmium 3.0E-06	Chromium 3.0E-06	Lead 9.0E-06
Potential Emission in tons/yr	4.40E-04	3.30E-04	3.30E-04	3.30E-04	9.89E-04

HAPs - Metals (continued)

Emission Factor in lb/mmBtu	Mercury 3.0E-06	Manganese 6.0E-06	Nickel 3.0E-06	Selenium 1.5E-05
Potential Emission in tons/yr	3.30E-04	6.60E-04	3.30E-04	1.65E-03

Methodology

No data was available in AP-42 for organic HAPs.

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
#2 Fuel Oil

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Worst Case Emissions for Boilers No. 1 through No. 8 Prior to Modifications

Company Name: Ft. Wayne State Developmental Center
Address, City IN Zip: Ft. Wayne, Indiana 46835
CP: 003-14555
Pit ID: 003-00266
Reviewer: ERG/AB
Date: 07/16/01

Heat Input Capacity MMBtu/hr	Potential Throughput kgals/year	S = Weight % Sulfur 0.5
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99.8

6244.62857

Includes boilers identified as No.1 through No.4, which each have a maximum capacity of 12.218 MMBtu/hour.

Emission Factor in lb/kgal	Pollutant				
	PM*	SO ₂	NO _x	VOC	CO
	2.0	71 (142.0S)	20.0	0.34	5.0
Potential Emission in tons/yr	6.2	221.7	62.4	1.1	15.6

Methodology

1 gallon of No. 2 Fuel Oil has a heating value of 140,000 Btu

Potential Throughput (kgals/year) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1kgal per 1000 gallon x 1 gal per 0.140 MM Btu

Emission Factors are from AP 42, Tables 1.3-1, 1.3-2, and 1.3-3 (SCC 1-03-005-01/02/03) Supplement E 9/98 (see erata file)

*PM emission factor is filterable PM only. Condensable PM emission factor is 1.3 lb/kgal.

Emission (tons/yr) = Throughput (kgals/ yr) x Emission Factor (lb/kgal)/2,000 lb/ton

Note: Check the applicable rules and test methods for PM and PM10 when using the above emission factors to confirm that the correct factor is used (i.e., condensable included/not included).

See page 2 for HAPs emission calculations.

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Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)

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#2 Fuel Oil

HAPs Emissions

Worst Case Emissions for Boilers No. 1 through No. 8 Prior to Modifications

Company Name: Ft. Wayne State Developmental Center

Address, City IN Zip: Ft. Wayne, Indiana 46835

CP: 003-14555

Pit ID: 003-00266

Reviewer: ERG/AB

Date: 07/16/01

HAPs - Metals

Emission Factor in lb/mmBtu	Arsenic 4.0E-06	Beryllium 3.0E-06	Cadmium 3.0E-06	Chromium 3.0E-06	Lead 9.0E-06
Potential Emission in tons/yr	1.75E-03	1.31E-03	1.31E-03	1.31E-03	3.93E-03

HAPs - Metals (continued)

Emission Factor in lb/mmBtu	Mercury 3.0E-06	Manganese 6.0E-06	Nickel 3.0E-06	Selenium 1.5E-05
Potential Emission in tons/yr	1.31E-03	2.62E-03	1.31E-03	6.56E-03

Methodology

No data was available in AP-42 for organic HAPs.

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton

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